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EXAMINER
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MERKLING, MATTHEW J

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* DAVID M. ROGGEMAN, JAMES OZIOMEK, and  
TIMOTHY L. TARTAMELLA

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Appeal 2009-012460  
Application 10/799,565  
Technology Center 1700

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Before CHARLES F. WARREN, CATHERINE Q. TIMM, and  
STEPHEN WALSH, *Administrative Patent Judges*.

Opinion for the Board filed by *Administrative Patent Judge* TIMM.

Opinion Dissenting-in-part filed by *Administrative Patent Judge* WALSH.

TIMM, *Administrative Patent Judge*.

## DECISION ON APPEAL<sup>1</sup>

### I. STATEMENT OF CASE

Appellants appeal under 35 U.S.C. § 134 from the Examiner's decision to reject claims 17-42. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

Appellants' invention relates to the humidification of fluids, which are poorly soluble in water, and particularly to humidification of hydrocarbons, such as butadiene, prior to catalytic polymerization (Spec. 1:2-5). The claims are directed to the apparatus for carrying out the humidifying process (*see, e.g.*, claim 17) and also to that apparatus in combination with the apparatus for polymerizing the humidified hydrocarbon (*see, e.g.*, claim 33).

It is the humidifying portion of the apparatus that is central to the disputes on appeal, and particularly, portions of the humidifying apparatus defined in terms of the hydrocarbons and water input into the system.

Figure 2 depicts the humidifying apparatus and is reproduced below:

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<sup>1</sup> The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, or for filing a request for rehearing, as recited in 37 C.F.R. § 41.52, begins to run from the "MAIL DATE" (paper delivery mode) or the "NOTIFICATION DATE" (electronic delivery mode) shown on the PTOL-90A cover letter attached to this decision.

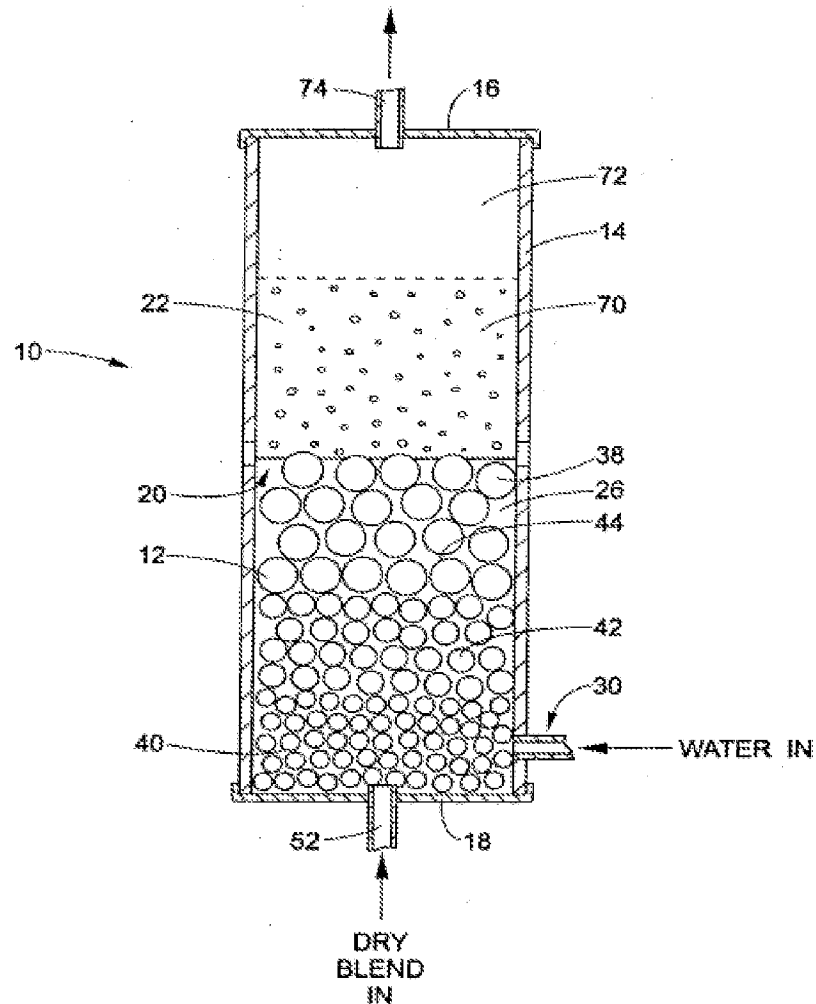


Fig. 2 is a side sectional view of humidifying column (Spec. 2:20)

The humidifier includes a column 10 packed with a bed 12 of dispersion material, such as porcelain beads, and including a head space 22 above the packed bed, i.e., a region free of dispersion material (Spec. 3:27 to 4:2; 4:15-16). The apparatus further includes an inlet 30 for introducing water to approximately cover the packing material 12, and an inlet 52 for introducing hydrocarbon in the form of a dry blend (Spec. 4:3-14).

In operation, as the lighter hydrocarbon rises through the water, water dissolves into the hydrocarbon (Spec. 5:14-20). Humidified droplets of the hydrocarbon rise into a disengagement zone 70 above the water. Within the disengagement zone 70, entrained undissolved water falls back down into the bed (as shown below the dashed line of Fig. 2), and the hydrocarbon droplets rise into region 72 of the disengagement zone 70 where the humidified hydrocarbon droplets coalesce and exit through the outlet 74 (Spec. 5:19-27).

The claims containing the disputed limitations, i.e., claims 17, 33, and 39, are reproduced below with reference numerals to the structures shown in Figure 2 and with the limitations of particular interest italicized:

17. An apparatus for humidifying a hydrocarbon stream comprising:

a vessel [column 10] which defines an interior cavity and having an inlet [52] adjacent a lower end of the cavity for receiving a hydrocarbon stream;

a bed of a packing material [12] in the cavity;

water filling at least a portion of the bed [12]; and

*a disengagement zone[70], comprising a hydrocarbon monomer having a water content and undissolved water entrained with the hydrocarbon.*

33. An apparatus for humidifying and polymerizing a hydrocarbon stream comprising:

a vessel [column 10] which defines an interior cavity, the vessel [10] comprising a first inlet [52] adjacent a lower end of the cavity for receiving a hydrocarbon stream, a second inlet [30] for adding water to the vessel [10], and an outlet [74];

a bed in the cavity, the bed comprising a packing material [12] and water which fills a portion of the bed;

*a head space [22] in the cavity above the bed [12] which allows liquid water to fall out of the hydrocarbon stream; and*

a polymerization reactor coupled to the outlet.

39. The apparatus of claim 33, further comprising a second vessel coupled to the inlet, *wherein the second vessel includes a mono-unsaturated alkene or conjugated diene.*

The Specification discloses static mixer 90 in Figure 1 (Spec. 6:11-14), which appears to meet the requirements of the second vessel of claim 39.

Appellants seek review of the following rejections maintained by the Examiner:<sup>2</sup>

A. The rejection of claims 17, 18, 20, 21, 26-29, and 34 under 35 U.S.C. § 102(b) as anticipated by Okada (JP 05-171164);<sup>3</sup> and

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<sup>2</sup> Appellants do not present the rejection of claims 27 and 28 under 35 U.S.C. § 112, ¶ 2 for our review (Amended Appeal Brief of Nov. 6, 2008, hereinafter “Br.”). Appellants attempted to overcome the indefiniteness rejection by amending the claims (After-Final Amdt. of Mar. 4, 2008). However, the Examiner did not enter the amendment (Advisory of Mar. 17, 2008; Ans. 2). Accordingly, since the Examiner noted that the After-Final Amendment was not entered and did not affirmatively withdraw the ground of rejection, we summarily affirm the rejection of claims 27 and 28 under 35 U.S.C. § 112, ¶ 2.

<sup>3</sup> The Examiner made the Japanese document of record on April 30, 2007 and relied upon paragraph 15 to reject the claims (Non-Final Office Action at 4 and 5; Final Office Action at 3 and 4). The Examiner’s search notes state that the Examiner consulted the JPO website for a machine translation (Search Info. Apr. 30, 2007). Appellants made an abstract and machine translation of record on October 30, 2007. In response to an Order by the

B. The rejection of claims 31, 36, and 40 under 35 U.S.C. § 102(b) as anticipated by Holst (US 5,650,128);

C. The rejection of claim 19 under 35 U.S.C. § 103(a) as obvious over Okada in view of Smith, Jr. (US 5,446,223);

D. The rejection of claim 25 under 35 U.S.C. § 103(a) as obvious over Okada in view of Yoneda (US 5,123,836);

E. The rejection of claims 22-24, 31, and 32 under 35 U.S.C. § 103(a) as obvious over Okada in view of Holst;

F. The rejection of claim 30 under 35 U.S.C. § 103(a) as obvious over Okada in view of Niwa (US 4,705,654);

G. The rejection of claims 33, 38, and 39 under 35 U.S.C. § 103(a) as obvious over Okada in view of Goode (US 6,111,03);

H. The rejection of claim 35 under 35 U.S.C. § 103(a) as obvious over Okada in view of Goode (US 6,111,034);

I. The rejection of claim 37 under 35 U.S.C. § 103(a) as obvious over Okada in view of Holst, and in further view of Goode; and

J. The rejection of claims 41 and 42 under 35 U.S.C. § 103(a) as obvious over Okada in view of Goode, and in further view of Birks et al. (US 4,847,207).

## II. DISCUSSION

According to Appellants,

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Board, the Examiner made a certified translation of record on June 16, 2009 (Order of June 9, 2009; Communication of June 16, 2009). There is no dispute as to the teachings of Okada and the certified translation describes the teachings of Okada in proper English. Therefore, we cite to this translation.

The controversy in this application has surrounded whether it is valid to consider certain claim terms as limiting the apparatus claims. The Examiner contends the limitations are directed to an article worked upon by the apparatus and not the apparatus itself. While Applicants vigorously dispute this interpretation of the claims in the arguments below, it should be clear that if the current claims were to issue into a patent, the claim terms at issue would be construed by a court to be limitations in view [of] Applicants' numerous statements arguing to that effect in the prosecution history.

(Amended Br. 5.)

The Examiner interprets limitations relating to the manner of operating the apparatus and the material worked upon by the apparatus as not further limiting the structure of the apparatus. For instance, in rejecting claim 17 as anticipated by Okada the Examiner states:

Regarding limitations recited in claim 1 [sic, 17] which are directed to a manner of operating disclosed system, neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP §2114 and 2115. Further, process limitations do not have a patentable weight in an apparatus claim. See *Ex parte Thibault*, 164 USPQ 666, 667 (Bd. App. 1969) that states "Expressions relating the apparatus to contents thereof and to an intended operation are of no significance in determining patentability of the apparatus claim.

(Ans. 3-4.)

The threshold issue arising is: Did the Examiner properly interpret the apparatus claims?

We answer this question in the affirmative.

The claims are directed to an apparatus, i.e., a machine for performing a function. As such, what is defined by the claim is “a concrete thing,



consisting of parts, or of certain devices and combination of devices.”” *In re Nuijten*, 500 F.3d, 1346, 1355 (Fed. Cir. 2007) (quoting *Burr v. Duryee*, 68 U.S. (1 Wall.) 531, 570 (1863)). Moreover, “it is well settled that a man cannot have a patent for the function or abstract effect of a machine, but only for the machine which produces it.” *Corning v. Burden*, 56 U.S. 252, 268 (1853). Also, “it has been long established that a person may not patent a combination of device and material upon which the device works, nor limit other persons from the use of similar material by claiming a device patent.” *In re Smith*, 36 F.2d 302, 303 (CCPA 1929); *see also In re Rishoi*, 197 F.2d 342, 344-45 (CCPA 1952) (refusing to give a liquid film created during the operation of the apparatus patentable weight in an apparatus claim because “there is no patentable combination between a device and the material upon which it works.”)

The reason such combinations are not permitted is that infringement cannot be predicated upon the material input into the apparatus, nor the use to which the apparatus is put. *See Roberts v. Ryer*, 91 U.S. 150, 151 (1875) (“The inventor of a machine is entitled to the benefit of all the uses to which it can be put, no matter whether he had conceived the idea of the use or not.”); *see also Morgan Env. Co. v. Albany Paper Co.*, 152 U.S.C. 425, 432-33 (1894).

For the above reasons, limitations directed to the article worked upon, the mode of operation, and other limitations of function or use, are said to limit an apparatus claim only to the extent that those limitations result in a patentably distinguishable structural difference in the claimed apparatus as compared to the prior art. *In re Casey*, 370 F.2d 576, 580 (CCPA 1967)

(“The claims in issue call for an apparatus or machine, viz. a tape dispensing machine. The manner or method in which such machine is to be utilized is not germane to the issue of patentability of the machine itself.”).<sup>4</sup>

Given the long held principles of law stated above, we determine that the Examiner correctly analyzed the scope of the claims and correctly found that Okada anticipates claim 17.

In terms of structure, claim 17 requires a vessel with an interior cavity and an inlet adjacent a lower end of the cavity, and a bed of packing material in the cavity. Okada shows such an apparatus in Figure 1. The claimed “disengagement zone” arises when the apparatus is filled to a particular level with water and hydrocarbon feedstock. This “zone” as claimed will change based upon the operation of the apparatus. There is no evidence that filling the apparatus to a particular level with water and hydrocarbon changes the structure of the apparatus, i.e., the “mechanical device” or “concrete thing, consisting of parts, or of certain devices and combination of devices.”

*Corning v. Burden*, 56 U.S. at 267; *Nuijten*, 500 F.3d at 1355 (quoting *Burr v. Duryee*, 68 U.S. (1 Wall.) 531, 570 (1853)).

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<sup>4</sup> The cases cited by Appellants are inapposite. In the case of *In re Nelson*, 137 F.2d 106 (CCPA 1943), the Board conceded that the prior art did not teach “the spray head of special character” required by claims 14 and 15, but concluded the improvement was in the spray head rather than its combination with other apparatus. *Id.* at 107. The court held that the fact that the improvement lied in the nozzle of the spray head did not preclude the patentability of the combination. *Id.* at 108-09. The quote from a Board decision reproduced in *Hester Indus., Inc. v. Stein, Inc.*, 142 F.3d 1472, (Fed. Cir. 1998) is not convincing in view of the principles of law articulated by the Supreme Court, as well as the principles articulated by our reviewing court, and its predecessor referenced in our opinion.

With regard to Appellants' statement that "if the current claims were to issue into a patent, the claim terms at issue would be construed by a court to be limitations in view [of] Appellants' numerous statements arguing to that effect in the prosecution history" (Br. 5), in view of the state of the law, we cannot agree that a court would necessarily so interpret the claims. Moreover, the mode of claim interpretation applied during patent prosecution is different than that used by courts in litigation. *See, e.g., In re Zletz*, 893 F.2d 319, 321 (Fed. Cir. 1989). During patent prosecution the pending claims must be interpreted as broadly as their terms reasonably allow without reading limitations from the Specification, or applicant's arguments, into the claims.<sup>5</sup> *Id.*

Because Appellants do not argue any of the other claims rejected as anticipated by Okada separately, those claims stand or fall with claim 17. We, therefore, sustain the rejection of claims 17, 18, 20, 21, 26-29, and 34 for anticipation by Okada.

With regard to rejection B, i.e., the Examiner's rejection of claims 31, 36, and 40 as anticipated by Holst, Appellants rely upon the same reasons as presented for the rejection for anticipation over Okada, i.e., that the disengagement zone is not taught (Br. 9). Appellants do not argue any claim apart from the others. We, therefore, select claim 31 as representative.

The Examiner found that Holst teaches the structure required by the rejected claims (Ans. 5-6). Appellants have not persuaded us of an error on the part of the Examiner with respect to the rejection over Holst. As we

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<sup>5</sup> Note that prosecution "history" is not yet "history" during prosecution before the examiner. During prosecution, claims can be amended, and positions changed.

stated above, the caselaw supports the Examiner's claim interpretation and Appellants do not convincingly rebut the Examiner's finding that Holst describes a structure anticipating the claimed structure.

Our dissenting colleague is of the opinion that the water input into Appellants' column is a necessary structural component of the claimed invention and "[t]he Examiner made no finding that Holst's apparatus comprised water." We do not agree that such a finding was necessary.

As the Examiner clearly stated: "[the] apparatus disclosed by Holst is identical to the apparatus claimed by the appellant (minus the limitations directed toward the materials worked upon in the apparatus[])." (Ans. 16.) This statement clearly encompasses the position that "water" in the subject claim language is not an apparatus limitation on the "vessel" as claimed.

A reasonable interpretation of claim 31, in light of the Specification and the case law, establishes that "water" and the "disengagement zone, comprising" the same are temporary processes steps, materials, and conditions. Indeed, the sole apparatus limitation in claim 31 is the packed vessel having an interior cavity and upper and lower inlets. Such a vessel can be used for any manner of chemical synthesis, lab or industrial, and the theory that such a vessel known in the art can again be patented in an apparatus claim solely on the basis of in-use process steps, materials, and conditions, intended and unintended, which have nothing to do with the known structure of the vessel is addressed by the discussed case law.

We, therefore, sustain the rejection of claims 31, 36, and 40 as anticipated by Holst.

With regard to the Examiner's rejections C through F listed above for obviousness over Odaka in combination with various other references, Appellants again rely upon the arguments presented against the rejection for anticipation over Okada (Br. 9-11). For the reasons presented above, Appellants have not persuaded us of any error by the Examiner with respect to these rejections.

With regard to the Examiner's rejection G listed above, i.e., the rejection of claims 33, 38, and 39 as obvious over Okada in view of Goode, Appellants present arguments directed to claims 33 and 39. We, therefore, select claims 33 and 39 as representative for deciding the issues on appeal.

Appellants contend that the Examiner failed to substantively address the limitation "a head space in the cavity above the bed which allows liquid water to fall out of the hydrocarbon stream" required by claim 33 (Br. 11).

The Examiner responds that Okada discloses a head space above the bed above spray nozzle 9 as shown in Figure 1. The Examiner finds that this head space has the ability to function as claimed, that the apparatus is identical to the claimed apparatus, and that the functional language does not distinguish the claimed apparatus from the prior art. (Ans. 17.)

Appellants disagree that Okada has a head space with the ability to allow liquid water to fall out of a fluid stream because a certain height is required for the water to fall out or separate from the hydrocarbon (Reply Br. 6).

The evidence supports the Examiner's finding that Okada reasonably describes an apparatus meeting the structural requirements of the claim. As a first matter, the apparatus is the vessel with cavity, inlet and outlet, and

packed bed. Okada teaches such an apparatus. The head space is a consequence of the operation of the apparatus. It is only after Appellants begin conducting their process that “a head space” as claimed arises. But, such a head space need never arise if the apparatus is used to conduct a different process. The operator of the apparatus is entitled to the benefit of all its uses and the manner in which the apparatus is used is not germane to the patentability of the apparatus itself. *Roberts v. Ryer*, 91 U.S. at 151; *Casey*, 370 F.2d at 580.

The Examiner found that Okada’s apparatus is capable of being operated so that the claimed head space occurs. This determination is reasonable in light of the similarities in structure between the claims apparatus and that of Okada.

Where there is reason to believe that the prior art structure possesses all the claimed characteristics including the capability of performing the claimed function, the burden shifts to the applicant to show that, in fact, the claimed function structurally distinguishes the claimed apparatus from the prior art apparatus. *In re Ludtke*, 441 F.2d 660, 664 (CCPA 1971).

Appellants cite to the Specification at page 5, lines 25-27 in arguing that Okada’s head space does not have the required capability (Reply Br. 6). But the fact that the disengagement zone 70 is of “sufficient height” to allow the separation of the entrained water and hydrocarbon as recited in the portion of the Specification cited by Appellants does not provide convincing evidence that Okada’s apparatus is not capable of being operated with a head space which would allow the required separation.

Turning to claim 39, Appellants further contend that the requirement for “a second vessel coupled to the inlet, wherein the second vessel includes a mono-unsaturated alkene or conjugated diene” as required by this claim is not present in the cited references (Br. 12). The Examiner finds that Okada’s mixer 6 has the structure required by the claimed second vessel (Ans. 17). But according to Appellants, “[a] vessel for mixing gases would be expected to be different from a vessel for mono-unsaturated alkene or conjugated diene monomer that is coupled to an inlet adjacent a lower end of the cavity for receiving a hydrocarbon stream.” (Br. 12.)

We note that Appellants identify the useful mono-unsaturated alkenes as including ethene (Spec. 2:29-30). It is not seen how Appellants’ second vessel, which appears to be mixer 90 shown in Figure 1, is patentability distinguishable in structure from the mixer 6 of Okada when Appellants’ mixer can also accommodate gases such as ethene (ethylene).

Appellants have not convinced us that the Examiner erred in rejecting claims 33, 38, and 39 as obvious over Okada in view of Goode.

Appellants advance no further arguments against the remaining rejections, i.e., rejections H through J listed above. Therefore, we sustain those rejections for the reasons presented above.

### III. CONCLUSION

On the record before us, we sustain all the rejections maintained by the Examiner.

### IV. DECISION

The decision of the Examiner is affirmed.

### V. TIME PERIOD FOR RESPONSE

Appeal 2009-012460  
Application 10/799,565

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED



WALSH, *Administrative Patent Judge, concurring-in-part and dissenting-in-part.*

I concur with the decision to affirm the rejection under 35 U.S.C. § 102(b) over Okada's disclosure, and the rejections under 35 U.S.C. § 103(a) over the combined teachings of Okada and other references. I also concur with the decision affirming the rejection of claims 27 and 28 under 35 U.S.C. § 112, second paragraph. I respectfully dissent from the decision to affirm the rejection under 35 U.S.C. § 102(b) over Holst's disclosure.

I agree that the evidence supports the Examiner's finding that Okada described an apparatus used to humidify a hydrocarbon stream and comprising a vessel, a bed of packing material, water filling at least a portion of the bed, and a disengagement zone. (Ans. 3.) The Examiner interpreted claim 1 as reciting "limitations . . . directed to a manner of operating disclosed system" that receive no weight. I do not interpret claim 1 in that way. I conclude instead that the disengagement zone defined in claim 1 does comprise "a hydrocarbon monomer having a water content and undissolved water entrained with the hydrocarbon."

Okada taught that its apparatus could be operated "like a scrubber," which sprays water from the upper side to the gas flowing from the lower side," e.g. via spray nozzle 9, or by a mode that "simply blows the gas in water," e.g. via clean water inlet 11. Okada, ¶¶ 10, 15. In either mode, the humidified gas would necessarily leave the vessel via an outlet above spray nozzle 9. *Id.* at ¶ 15. The Examiner explained as much. *See* Ans. at 15 and 17. I agree with my colleagues that the evidence was sufficient to shift the

burden to Appellants to show that the upper zone of Okada's vessel did not comprise "a hydrocarbon monomer having a water content and undissolved water entrained with the hydrocarbon." *In re Ludtke*, 441 F.2d 660, 664 (CCPA 1971); *In re Schrieber*, 128 F.3d 1473, 1477 (Fed. Cir. 1997). In the face of that evidence, I find Appellants' arguments about claim construction are misdirected and unpersuasive. As Appellants repeat the same or similar arguments regarding all the obviousness rejections, I agree with my colleagues that those rejections must also be affirmed.

The rejection over Holst is based on different evidence. The Examiner made no finding that Holst's apparatus comprised water. (Ans. 5-6.) Appellants argue that "the Office Action completely fails to substantively address the 'a hydrocarbon monomer having a water content and undissolved water entrained with the hydrocarbon.'" (App. Br. 9.) I agree. Without a foundational finding that water was present in the Holst apparatus, I see no evidence to support finding that Holst described a disengagement zone comprising entrained undissolved water. Accordingly, I respectfully dissent from the decision to affirm the anticipation rejection based on Holst.

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